# IMAGES IN CARDIOLOGY

## Detection of right atrial and pulmonary artery thrombosis after the Fontan procedure by magnetic resonance imaging

The Fontan procedure has been extensively used for palliation of patients with univentricular heart defects. Thrombi and thromboembolic complications have been frequently reported after this operation. Magnetic resonance imaging (MRI) has been shown to be very useful in patients with congenital heart disease and also in the detection of intracardiac masses and thrombosis. We describe for the first time the ability of MRI to detect right heart thrombosis and monitor the effect of treatment in a Fontan patient.

A 29 year old Fontan patient presented with recent onset ankle oedema and pronounced asthenia. He had been treated with the Fontan procedure when he was 2 years old because of a double outlet right ventricle and transposition of the great vessels. MRI was performed by using a 1.5T imager (Intera, Philips Medical Systems) and a breath-hold fast field echo sequence (FFE). MRI showed a large, mobile right atrial mass attached to the free wall indicating the presence of a thrombus, and also detected the presence of endoluminal pulmonary arterial thrombi (upper panels—to view video footage go to http://www.heartjnl.com/supplemental). The patient was treated with oral anticoagulants and MRI was repeated after three months. A notable improvement in the patient's clinical condition was reported, while the MRI showed that the pulmonary arterial clots and intracardiac thrombus had disappeared (lower panels—to view video footage go to http://www.heartjnl.com/supplemental).

After the Fontan procedure MRI may represent a valuable alternative to other imaging methods in detecting intracardiac thrombi and for monitoring their evolution after treatment. Particularly relevant is the ability of MRI to identify pulmonary artery thrombosis in such patients.

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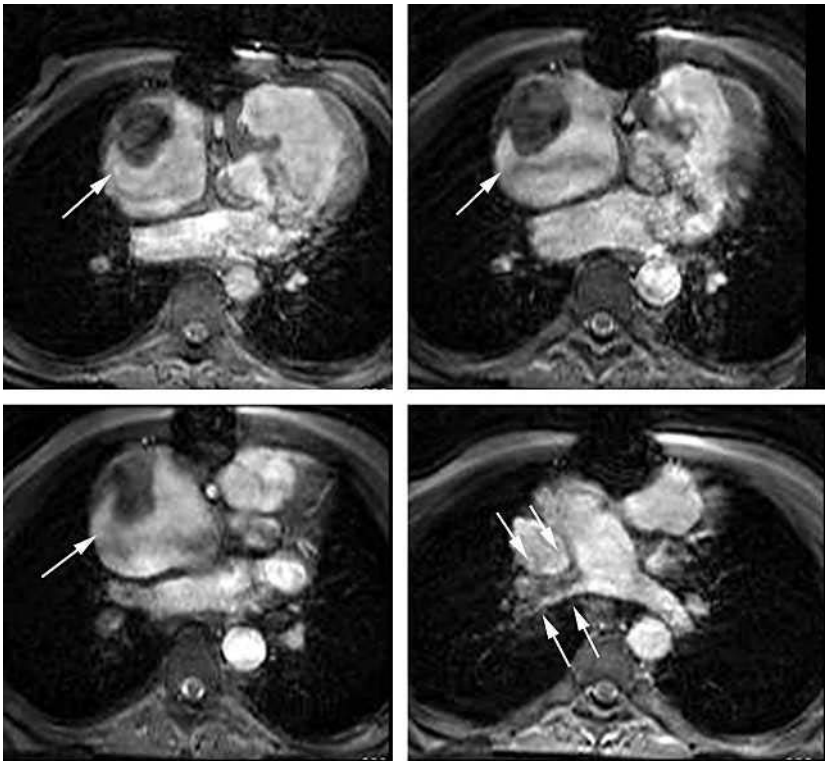
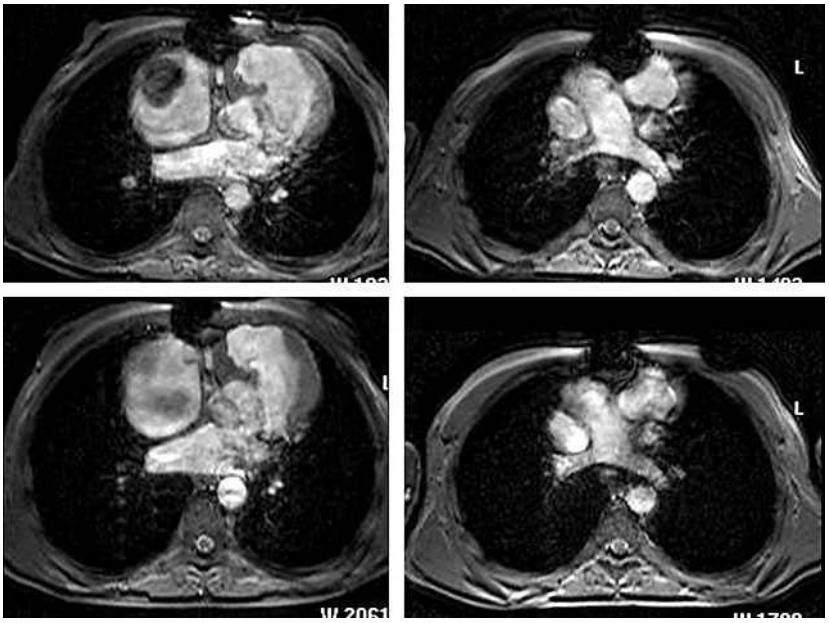
Video footage appears on the *Heart* website—http://www.heartjnl.com/supplemental



Breath hold, FFE–Cine MRI. A large pedunculated mass with low signal intensity originating from the right atrial free wall can be seen over several different levels. The right pulmonary artery also shows a low signal layer of abnormal tissue decreasing the lumen of the vessel significantly (arrows).




After three months of oral anticoagulation the right atrial and right pulmonary artery formations disappeared (upper images before treatment, lower images after treatment).